IRRIGATION DATA FROM CHASE, DUNDY, AND PERKINS COUNTIES, SOUTHWESTERN NEBRASKA, 1984

By Diane M. Stephens, Frederick J. Heimes, and Richard R. Luckey

---

U.S. GEOLOGICAL SURVEY

Open-File Report 85-164

Lakewood, Colorado

1985

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

GEOLOGICAL SURVEY

Dallas Peck, Director

For additional information
write to:

U.S. Geological Survey
Water Resources Division
Box 25046, Mail Stop 412,
Denver Federal Center
Lakewood, Colorado 80225

Copies of this report can
be purchased from:

Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 25425, Denver Federal Center
Lakewood, Colorado 80225
(Telephone: [303] 236-7476)
(FTS 776-7476)

CONTENTS

	Page
Abstract	1
Introduction	1
Purpose and scope	3
Acknowledgments	3
Methods of study	3
Irrigation data	5
Selected references	32

ILLUSTRATIONS

Figure 1.	Map showing location of pumpage-sampling area	2
2.	Map showing location of wells monitored during the 1984 growing season	4
3.	Diagram showing system of numbering wells	6

TABLES

Table 1A.	Crop and well data for irrigation sites in Chase County	7
1B.	Crop and well data for irrigation sites in Dundy County	9
1C.	Crop and well data for irrigation sites in Perkins County	10
2A.	Discharge data for irrigation wells in Chase County	12
2B.	Discharge data for irrigation wells in Dundy County	14
2C.	Discharge data for irrigation wells in Perkins County	16
3A.	Time-of-operation data for irrigation wells in Chase County	18
3B.	Time-of-operation data for irrigation wells in Dundy County	22
3C.	Time-of-operation data for irrigation wells in Perkins County	25
4A.	Summary of water applied to crops in Chase County	28
4B.	Summary of water applied to crops in Dundy County	30
4C.	Summary of water applied to crops in Perkins County	31

CONVERSION TABLE

Multiply inch/pound units	By	To obtain metric unit
inch (in.)	25.40	millimeter
foot	.3048	meter
mile	1.609	kilometer
acre	0.4047	square hectometer
acre-foot	1,233	cubic meter
square mile (mi^2)	2.590	square kilometer
horsepower	745.7	joule per second
cubic foot per minute	0.4719	liter per second
gallon per minute	0.06309	liter per second

IRRIGATION DATA FROM CHASE, DUNDY, AND PERKINS COUNTIES, SOUTHWESTERN NEBRASKA, 1984

By Diane M. Stephens, Frederick J. Heimes, and Richard R. Luckey

ABSTRACT

This report summarizes irrigation data collected by the U.S. Geological Survey in Chase, Dundy, and Perkins Counties, southwestern Nebraska. The data were collected as part of a study to better define the relationship between pumpage for irrigation and return flow from applied water (irrigation plus precipitation). The report contains data on crops, site location, discharge, time of operation, and water application for 57 randomly selected irrigation wells that were monitored during the 1984 irrigation season.

INTRODUCTION

The study area consists of Chase, Dundy, and Perkins Counties in southwestern Nebraska (fig. 1). The three counties have a total area of 2,700 mi^2 with 895 mi^2 in Chase County, 920 mi^2 in Dundy County, and 885 mi^2 in Perkins County. The study area is in the High Plains section of the Great Plains physiographic province. Most of the area consists of gently rolling uplands with many small flat areas (Lappala 1978). The southwestern part of the area contains sandhills and some small, interdune lakes and marshes. The area is drained by small streams that flow eastward. Bottomlands along the streams comprise a small percentage of the study area.

Irrigation in the study area is nearly all from ground water. There are about 2,800 irrigation wells in the three-county area. About 45 percent of these wells are in Chase County, 26 percent in Dundy County, and 29 percent in Perkins County. Most of the irrigation systems are center-pivot sprinklers. In Chase County, 74 percent of the irrigation systems are center-pivot sprinklers; in Dundy and Perkins Counties 91 percent of the irrigation systems are center-pivot sprinklers. A typical center-pivot sprinkler system irrigates about 130 acres. Flood-irrigation systems generally use gated-irrigation pipe.

Corn, the major irrigated crop in all three counties, accounts for 70 percent of all irrigated crops. Wheat, the second most commonly irrigated crop, only accounts for 10 percent of all irrigated crops. Dry beans, sorghum, alfalfa, and other crops also are irrigated in the study area. In recent years, the trend has been to replace irrigated corn with crops that need less irrigation water such as wheat, dry beans, and sorghum.

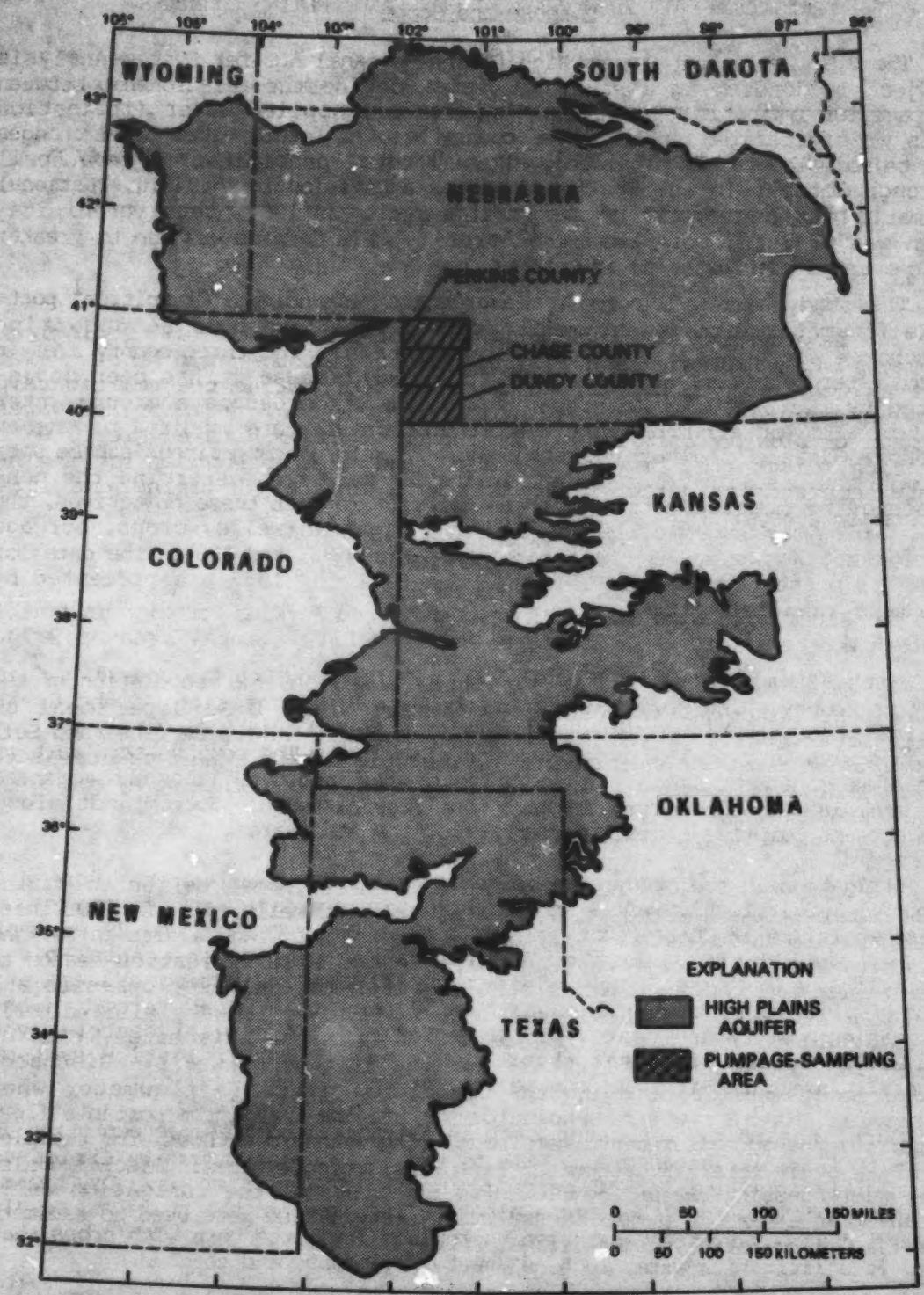

Figure 1.—Location of pumpage-sampling area.

Purpose and Scope

The U.S. Geological Survey High Plains Regional Aquifer System-Analysis Project is conducting a study to better define the relationship between pumpage for irrigation and return flow from all applied water (irrigation plus precipitation) in the three-county area so future water-level changes can be more accurately predicted. Normal total precipitation from April through October in the Southwest Nebraska Division is 15.94 in. (National Climatic Data Center, 1983). During this period in 1984, total precipitation was 0.33 in. more than the normal. This surplus was due to greater than average precipitation in October.

The study also will compare measurements made using a Clampitron[1] portable flowmeter with measurements from inline flowmeters to determine discharge from individual irrigation systems. The three-county area in southwestern Nebraska was chosen for this study because it has been designated by the Nebraska Department of Water Resources as a ground-water control area and all irrigation systems in this area are required to have an approved inline flowmeter installed. Therefore, comparisons can be made between the portable flowmeter and inline flowmeters to determine the consistency of measurements from these meters. To meet these objectives, the U.S. Geological Survey collected data on irrigation wells, crops, acreage irrigated, and pumpage for irrigation during 1983 and 1984. The data for 1984 are presented in this report. The data for 1983 are presented by Stephens and others (1984).

Acknowledgments

Collection of data for this report relied on the cooperation of the Upper Republican Natural Resources District, the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, and Soil Conservation Service, and numerous irrigators whom allowed us access to their irrigation systems. Without their cooperation, this study could not have been conducted.

METHODS OF STUDY

The data presented in this report (tables 1A-4C) were collected during 1984. Data were collected at 57 randomly selected wells (fig. 2). Of these wells, 27 are in Chase County, 17 are in Dundy County, and 13 are in Perkins County. The wells were visited prior to the 1984 irrigation season to obtain site location and initial readings from the inline flowmeters and energy (electric or natural gas) meters. The wells were visited periodically during the summer to obtain data on crops, discharge, time of operation, and water application for the irrigation wells. Discharge measurements were made using the Clampitron portable flowmeter when possible. When it was not possible to use the Clampitron portable flowmeter, discharge measurements were made using standard methods, for example, using a pygmy meter in open-ditch flood-irrigation systems. Discharge also was measured using the inline flowmeter installed on the irrigation well. Volumetric inline flowmeters and energy meters also were used to estimate the time of operation of the irrigation well.

---

[1]The use of brand names in this report are for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

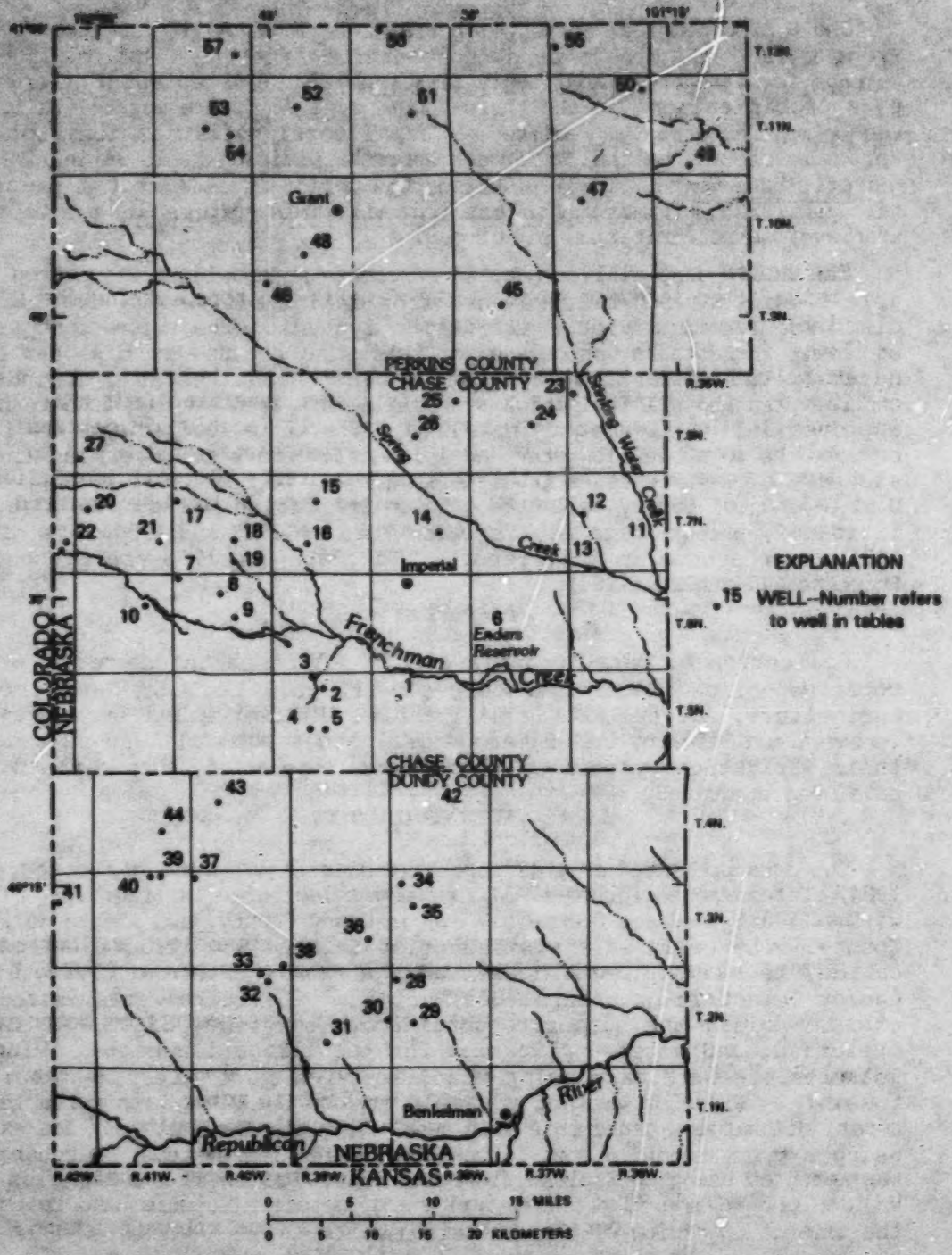

Figure 2.—Location of wells monitored during the 1984 growing season.

IRRIGATION DATA

Explanation of Terms for Tables 1A-1C

TABLE 1A-1C—CROP AND WELL DATA

Well location
Local numbering system used for tables 1A-1C; see figure 3

Map number
Number corresponding to location of wells monitored during the 1984 growing season; see figure 2

Well identifier
The "well identifier" is a 15-digit number generated from the original latitude and longitude of the well location in degrees, minutes, and seconds with a 2-digit sequence code at the end to locate multiple wells within a 1-second area. The well identifier is unique for each well and is not changed once it has been entered into the U.S. Geological Survey's computer files.

Irrigated-crop data
Type —Type of crop(s) irrigated at the site
System—Type of irrigation system used:
- Pivot = Center pivot
- Flood = Ditch or gated pipe
- Sprinkler = Sprinklers other than center pivot

Acres —Acreage of crop(s) irrigated at the site
Source—Source of acreage information:
- ASCS = Agricultural Stabilization and Conservation Service of U.S. Department of Agriculture
- Est. = Estimated
- Meas. = Measured

Well data
Depth —Depth of well, in feet below land surface
Discharge pipe diameter—Diameter of discharge pipe, in inches
Pump horsepower —Rated pump-motor horsepower from motor plate
Power
Source —Pump power source:
- Elec. = Electric motor
- N. gas = Natural-gas engine
- Diesel = Diesel engine
- LP gas = Liquid-propane engine

Rating—
- Electrical meter = Instantaneous kilowatt demand, in kilowatts
- Natural gas meter = Instantaneous natural gas demand, in cubic feet per minute

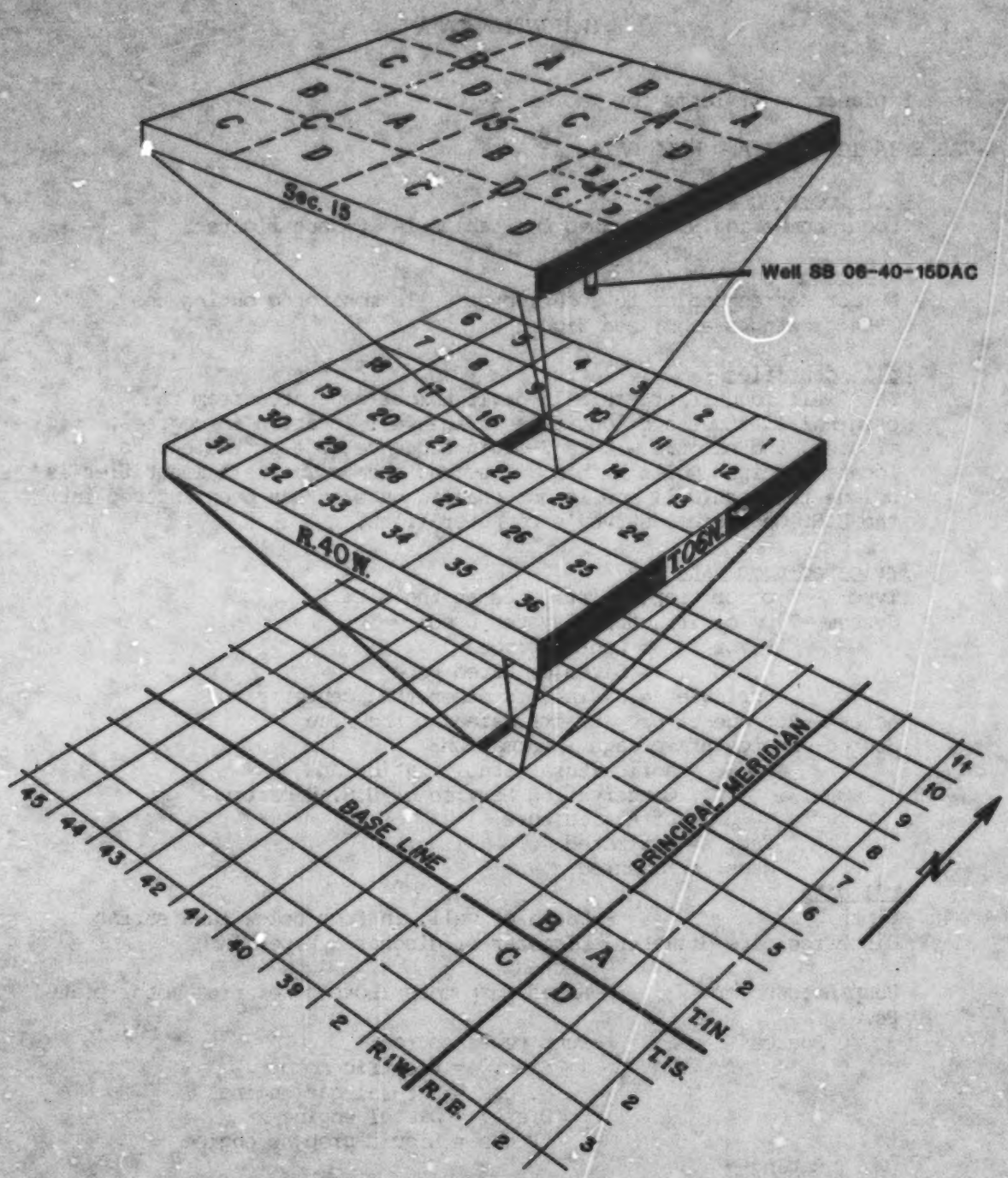

Figure 3.--System of numbering wells.

Table 1A.—Crop and well data for irrigation sites in Chase County

Well location	Map number from figure 2	Well identifier	Irrigated-crop data				Well data				
			Type	System	Acres	Source	Depth (feet)	Discharge-pipe diameter (inches)	Pump horse power	Power	
										Source	Rating
SB-05-38-08-DB	1	402507101390901	Beans	Pivot	125.2	ASCS	—	8	—	Diesel	—
SB-05-39-03-CC	2	402532101441101	Barley	Pivot	129.3	ASCS	351	8.6	—	Elec.	—
SB-05-39-04-BA	3	402559101452001	Corn	Pivot	133.5	ASCS	335	8	—	N. gas	.2
SB-05-39-21-B	4	402320101451801	Corn Beans	Pivot Pivot	63.5 63.5	ASCS ASCS	320	8	—	Diesel	—
SB-05-39-22-B	5	402321101441101	Wheat	Pivot	130.0	Est.	—	—	—	Diesel	—
SB-06-37-19-DA	6	402813101331601	Corn	Pivot	125.4	ASCS	275	8	—	Diesel	—
SB-06-40-06-B	7	403111101542601	Corn	Pivot	120.7	ASCS	308	10	60	Elec.	22
SB-06-40-09-AAC	8	403018101513601	Corn	Pivot	103.8	ASCS	292	8	—	N. gas	—
SB-06-40-15-DCA	9	402901101502701	Cane	Pivot	180.7	ASCS	340	8	100	Elec.	79
SB-06-41-11-C	10	402954101564001	Corn	Flood	99.6	ASCS	250	10	—	Elec.	22
SB-07-36-13-CBA	11	403421101213001	Corn	Flood	102.7	ASCS	221	8.6	150	Elec.	126
SB-07-36-18-DAC	12	403411101362301	Alfalfa Cane	Sprinkler Flood	23.3 57.2	ASCS	150	6.6	—	LP gas	—
SB-07-36-32-CDD	13	403127101255001	Corn	Flood	46.6	ASCS	204	6	—	LP gas	—
SB-07-38-23-BCC	14	403338101361901	Corn	Pivot	113.9	ASCS	320	8	75	Elec.	77
SB-07-39-09-D	15	403505101444701	Wheat	Pivot	105.8	ASCS	290	8	100	Elec.	68
SB-07-39-28-B	16	403255101451701	Corn Grass	Pivot Pivot	71.6 56.4	ASCS ASCS	320	8	75	Elec.	53
SB-07-40-07-CCB	17	403508101544001	Corn	Flood	135.0	Est.	275	10.7	60	Elec.	52

Table 1A.—Crop and well data for irrigation sites in Chase County—Continued

Well location	Map number from figure 2	Well identifier	Irrigated-crop data			Well data				Power	
			Type	System	Acres	Source	Depth (feet)	Discharge-pipe diameter (inches)	Pump horse power	Source	Rating
SB-07-40-27-AAC	18	403255101503401	Corn	Pivot	130.2	ASCS	310	8	100	Elec.	63
SB-07-40-34-ADC	19	403148101504601	Cane	Pivot	443.0	ASCS	316	8	350	Elec.	326
SB-07-41-18-AA	20	403440102004001	Corn	Pivot	126.6	ASCS	290	8	75	Elec.	64
SB-07-41-25-B	21	403256101553501	Beans	Pivot	64.9	ASCS	300	8	100	Elec.	78
			Wheat	Pivot	64.9	ASCS					
SB-07-42-25-BAB	22	403309102021001	Corn	Flood	137.1	ASCS	260	8.6	100	Elec.	77
			Beans	Flood	53.0	ASCS					
SB-08-36-07-BBD	23	404047101271101	Wheat	Pivot	130.4	ASCS	360	8	—	Elec.	—
SB-08-37-22-A	24	403902101300201	Corn	Pivot	130.7	ASCS	320	8	—	N. gas	—
SB-08-38-12-C	25	404022101350901	Corn	Pivot	152.3	ASCS	214	8	—	Diesel	—
SB-08-38-21-DD	26	403824101380301	Corn	Pivot	55.0	ASCS	220	6	—	Diesel	—
			Oats	Pivot	18.3	ASCS					
			Corn	Pivot	128.1	ASCS					
SB-08-41-31-BAB	27	403729101012001	Corn	Pivot	37.2	ASCS	220	6.6	—	Diesel	—

Table 1B.—Crop and well data for irrigation wells in Dundy County

Well location	Map number from figure 2	Well identifier	Irrigated-crop data				Well data				
			Type	System	Acres	Source	Depth (feet)	Discharge-pipe diameter (inches)	Pump horse power	Power Source	Power Rating
SB-02-38-07-B	28	400931101393201	Corn	Pivot	118.2	ASCS	210	8.6	75	Elec.	58
SB-02-38-20-BA	29	400749101382101	Corn	Pivot	130.8	ASCS	215	8	75	Elec.	58
SB-02-39-13-D	30	400815101400301	Corn	Pivot	126.0	ASCS	200	8	—	N. gas	—
SB-02-39-28-BB	31	400652101440101	Corn	Pivot	131.0	ASCS	137	8.6	—	Elec.	59
SB-02-40-02-ACDD	32	401011101481601	Corn	Pivot	243.1	ASCS	—	8	—	LP gas	—
SB-02-40-02-BBAA	33	401034101483201	Corn	Pivot	119.5	ASCS	215	8	—	LP gas	—
SB-03-38-06-D	34	401514101385701	Corn	Pivot	132.5	ASCS	305	8	—	N. gas	—
SB-03-38-17-BABC	35	401359101382101	Alfalfa	Sprinkler	67.3	ASCS	160	8	—	N. gas	—
SB-03-39-26-AA	36	401207101412401	Alfalfa Corn Grass	Pivot Pivot Pivot	20.0 60.0 50.0	ASCS ASCS ASCS	149	8	60	Elec.	51
SB-03-40-06-B	37	401532101531101	Corn	Pivot	130.0	ASCS	300	8		LP gas	—
SB-03-40-36-CAC	38	401103101471101	Corn Cane	Pivot Pivot	317.0 33.0	ASCS ASCS	—	8	—	Diesel	—
SB-03-41-02-B	39	401535101553001	Corn	Pivot	120.4	ASCS	—	8	50	Elec.	—
SB-03-41-03-A	40	401532101560601	Corn	Pivot	120.4	ASCS	—	8	—	Elec.	—
SB-03-42-10-DA	41	401423101023901	Corn	Pivot	176.5	ASCS	295	8	150	Elec.	118
SB-04-38-04-AA	42	402050101363801	Corn	Pivot	130.0	Est.	230	8.6	—	N. gas	—
SB-04-40-08-D	43	401928101513001	Wheat Corn	Pivot Pivot	61.7 65.8	ASCS ASCS	320	8.6	—	Elec.	—
SB-04-41-23-CAC	44	401746101552801	Wheat Cane	Pivot Pivot	97.6 24.0	ASCS ASCS	320	8.6	—	LP gas	—

Table 1C.—Crop and well data for irrigation wells in Perkins County

Well location	Map number from figure 2	Well identifier	Irrigated-crop data				Well data				
			Type	System	Acres	Source	Depth (feet)	Discharge-pipe diameter (inches)	Pump horse power	Power Source	Power Rating
SB-09-37-09-DDB	45	404538101321001	Corn	Pivot	133.8	ASCS	433	8	100	Elec.	74
SB-09-39-06-ABC	46	404659101483401	Corn	Pivot	117.6	ASCS	312	8	100	Elec.	—
SB-10-36-08-ACC	47	405110101262601	Corn Beans	Pivot Pivot	62.0 64.0	ASCS ASCS	537	8	100	Elec.	—
SB-10-39-27-C	48	404815101452701	Corn	Pivot	127.0	ASCS	—	8	—	Elec.	—
SB-11-35-33-BCB	49	405256101190501	Corn Wheat	Pivot Pivot	65.0 65.0	ASCS ASCS	460	8	150	Elec.	—
SB-11-36-01-CAC	50	405654101223801	Corn	Pivot	125.5	ASCS	440	8	100	Elec.	—
SB-11-38-15-A	51	405511101381201	Corn	Pivot	128.0	ASCS	477	8	—	Diesel	—
SB-11-39-09-DD	52	405602101461101	Corn	Pivot	129.2	ASCS	407	8	125	Elec.	—
SB-11-40-22-BBB	53	405455101522701	Wheat	Pivot	125.0	ASCS	438	8.6	—	Engine	—
SB-11-40-23-DDA	54	4054181015019u1	Corn	Pivot	125.0	ASCS	—	8	150	Elec.	—
SB-12-36-30-B	55	405906101282601	Corn	Pivot	100.0	ASCS	420	8	100	Elec.	—
SB-12-38-20-BBD	56	410000101410501	Beans	Pivot	126.0	ASCS	420	8	—	N. gas	—
SB-12-40-25-CCC	57	405827101502301	Corn	Pivots	260.0	Est.	398	10.7	—	Elec.	—

Explanation of Terms for Tables 2A-2C

TABLE 2A-2C—DISCHARGE DATA

Well Location
Local numbering system used for tables 2A-2C; see figure 3

Map number
Number corresonding to location of wells monitored during the 1984 growing season; see figure 2

Discharge Data

Date	—Date when measurement was made
Discharge	—Measured discharge, in gallons per minute
Clampitron	—Portable flowmeter used
Inline	—Flowmeter installed in irrigation system (see remarks)
Other	—Other standard method of discharge measurement (see remarks)
Remarks	—McCrometer, Water Specialties, SLV and Sparling, brands of inline flowmeters

Table 2A.--Discharge data for irrigation wells in Chase County

Well location	Map number from figure 2	Discharge Data				Remarks
		Date	Discharge (gallons per minute)			
			Clamp-itron	In-line	Other	
SB-05-38-08-BD	1	8/02/84	682	815	—	McCrometer
SB-05-39-03-CC	2	—	—	—	—	No data for wheat
SB-05-39-04-BA	3	8/14/84	—	893	—	McCrometer
		8/17/84	976	934	—	Do.
SB-05-39-21-B	4	7/12/84	869	885	—	McCrometer
		8/14/84	839	873	—	Do.
SB-05-39-22-B	5	—	—	—	—	No data for wheat
SB-06-37-19-DA	6	7/09/84	863	944	—	McCrometer
		8/02/84	823	935	—	Do.
SB-06-40-06-B	7	8/14/84	628	605	—	McCrometer
SB-06-40-09-AAC	8	7/12/84	—	—	—	Crop destroyed
SB-06-40-15-DCA	9	8/02/84	1327	1392	—	McCrometer
		8/14/84	1267	1358	—	Do.
SB-06-41-11-C	10	8/02/84	1318	1303	—	Water Specialties
		8/13/84	1456	1382	—	Do.
SB-07-36-13-CBA	11	8/02/84	1075	1147	—	McCrometer
		8/14/84	1197	1182	—	Do.
SB-07-36-18-DAC	12	—	—	—	—	No measurement
SB-07-36-32-CDD	13	8/14/83	916	919	—	McCrometer
SB-07-38-23-BCC	14	—	—	—	—	No measurement

Table 2A.—Discharge data for irrigation wells in Chase County—Continued

Well Location	Map number from figure 2	Discharge Data				Remarks
		Date	Discharge (gallons per minute)			
			Clamp-itron	In-line	Other	
SB-07-39-09-D	15	3/01/84	—	—	—	No data for wheat
SB-07-39-28-B	16	8/14/84	699	—	—	Inline flowmeter not working
SB-07-40-07-CCB	17	8/13/84	—	1325	1070	Water Specialties and pygmy meter
		8/16/84	—	1330	1395	Do.
SB-07-40-27-AAC	18	7/12/84	742	831	—	McCrometer
		8/14/84	890	806	—	Do.
SB-07-40-34-ADC	19	8/14/84	2562	2454	—	McCrometer
SB-07-41-18-AA	20	8/13/84	830	883	—	McCrometer
SB-07-41-25-B	21	8/13/84	814	825	—	McCrometer
SB-07-42-25-BAB	22	7/19/84	1574	1496	—	McCrometer
		8/13/84	1646	1529	—	Do.
SB-08-36-07-BBD	23	3/01/84	—	—	—	No data for wheat
SB-08-37-22-A	24	8/15/84	933	945	—	McCrometer
SB-08-38-12-C	25	8/02/84	852	874	—	McCrometer
		8/14/84	976	959	—	Do.
SB-08-38-21-DD	26	8/03/84	448 N	492 N	—	McCrometer N=North pivot
		8/03/84	797 S	777 S	—	Do. S=South pivot
		8/14/84	477 N	484 N	—	Do. N=North pivot
		8/14/84	787 S	766 S	—	Do. S=South pivot
SB-08-41-31-BAB	27	7/13/84	501	412	—	McCrometer

Table 2B.--Discharge data for irrigation wells in Dundy County

Well location	Map number from figure 2	Discharge Data				Remarks
		Date	Discharge (gallons per minute)			
			Clamp-itron	In-line	Other	
SB-02-38-07-B	28	7/11/84	768	691	—	Sparling
		8/01/84	780	724	—	Do.
SB-02-38-20-BA	29	8/01/84	690	788	—	Sparling
SB-02-39-13-D	30	8/01/84	796	775	—	McCrometer
		8/16/84	775	745	—	Do.
SB-02-39-28-BB	31	8/01/84	715	679	—	McCrometer
		9/10/84	654	616		Do.
SB-02-40-02-ACDD	32	10/11/84	—	—	—	No measurements
SB-02-40-02-BBAA	33	8/01/84	865	913	—	McCrometer
SB-03-38-06-D	34	8/01/84	888	938	—	Sparling
		8/16/84	794	870	—	Do.
SB-03-38-17-BADC	35	8/01/84	798	850	—	McCrometer
SB-03-39-26-AA	36	8/01/84	759	927	—	Inline flowmeter is a B&V
		10/11/84	793	806	—	McCrometer

Table 28.—Discharge data for irrigation wells in Dundy County—Continued

Well location	Map number from figure 2	Discharge Data				Remarks
		Date	Discharge (gallons per minute)			
			Clamp-itron	In-line	Other	
SB-03-40-06-B	37	7/11/84	724	706	—	Water Specialties
		8/01/84	753	767	—	Do.
SB-03-40-36-CAC	38	8/01/84	1639	1642	—	McCrometer
SB-03-41-02-B	39	7/11/84	672	721	—	Water Specialties
		8/01/84	692	724	—	Do.
SB-03-41-03-A	40	7/11/84	832	785	—	Sparling
		8/01/84	841	869	—	Do.
SB-03-42-10-DA	41	7/31/84	959	1128	—	McCrometer
		8/16/84	925	1143	—	Do.
SB-04-38-04-AA	42	8/01/84	1021	1022	—	McCrometer
		8/16/84	997	978	—	Do.
SB-04-40-08-D	43	8/01/84	782	839	—	McCrometer
		8/16/84	811	870	—	Do.
SB-04-41-23-CAC	44	—	—	—		No data for wheat

Table 2C.--Discharge data for irrigation wells in Perkins County

Well location	Map number from figure 2	Discharge Data				Remarks
		Date	Discharge (gallons per minute)			
			Clamp-itron	In-line	Other	
SB-09-37-09-DDB	45	7/10/84	747	746	—	McCrometer
		8/15/84	734	733	—	Do.
SB-09-39-06-ABC	46	7/10/84	644	700	—	McCrometer
		8/15/84	687	745	—	Do.
SB-10-36-08-ACC	47	7/10/84	708	732	—	Sparling
		8/15/84	612	685	—	Do.
SB-10-39-27-C	48	8/15/84	768	773	—	McCrometer
		8/17/84	778	788	—	Do.
SB-11-35-33-BDB	49	8/03/84	852	877	—	Water Specialties
		8/15/84	890	873	—	Do.
SB-11-36-01-CAC	50	8/15/84	714	752	—	Water Specialties
		8/17/84	683	724	—	Do.
SB-11-38-15-A	51	8/17/84	738	740	—	McCrometer
SB-11-39-09-DD	52	7/10/84	700	690	—	McCrometer
		8/15/84	649	652	—	Do.
SB-11-40-22-BBB	53	2/29/84	—	—	—	No data for wheat
SB-11-40-23-DDA	54	8/03/84	907	905	—	Water Specialties
		8/15/84	910	905	—	Do.
SB-12-36-30-B	55	7/10/84	768	808	—	Water Specialties
		8/03/84	642	679	—	Do.
SB-12-38-20-BBD	56	8/15/84	509	698	—	Sparling
SB-12-40-25-CCC	57	8/03/84	1235	1234	—	McCrometer
		8/15/84	1325	1320	—	Do.

Explanation of Terms for Tables 3A-3C

TABLE 3A-3C—TIME OF OPERATION

Well Location
Local numbering system used for tables 3A-3C; see figure 3

Map number
Number corresponding to location of wells monitored during the 1984 growing season; see figure 2

Date
Begin —Beginning date of time-of-operation measurement
End —Ending date of time-of-operation measurement

Inline flowmeter time—Time computed from inline flowmeter, in hours

Energy meter
Type —Elec. = Electric meter
—N. gas = Natural-gas meter
Time —Time computed from energy meter, in hours

Other —Time from other sources, if applicable
Source —Source of other time of operation data
Time —Time computed from other source, in hours

Remarks —McCrometer, Water Specialties, and Sparling; are brands of inline flowmeters

Table 3A.—Time-of-operation data for irrigation wells in Chase County

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-05-38-08-BD	1	2/27/84	8/03/84	368	—	—	—	—	McCrometer; engine hour meter not working
		8/03/84	10/30/84	637*	—	—	—	—	*Some water put on wheat
			Total	1005*					
SB-05-39-03-CC	2	—	—	—	—	—	—	—	No data for wheat
SB-05-39-04-BA	3	2/27/84	6/12/84	94	Gas	86	—	—	McCrometer
		6/12/84	7/12/84	110	Gas	105	—	—	Do.
		7/12/84	8/14/84	335	Gas	351	—	—	Do.
		8/14/84	10/30/84	544	Gas	431	—	—	Do.
			Total	1083	Total	973			
SB-05-39-21-B	4	10/25/83	2/27/84	0	—	—	Engine hr.	0	McCrometer; engine hour meter other source of time
		2/27/84	6/12/84	27	—	—	Engine hr.	26	
		6/12/84	8/14/84	581	—	—	Engine hr.	565	
		8/14/84	10/30/84	398	—	—	Engine hr.	391	Do.
			Total	1006			Total	982	
SB-05-39-22-B	5	—	—	—	—	—	—	—	No data for wheat
SB-06-37-19-DA	6	10/27/83	2/27/84	0	—	—	—	—	McCrometer
		2/27/84	7/09/84	63	—	—	—	—	Do.
		7/09/84	8/02/84	263	—	—	—	—	Do.
		8/02/84	10/29/84	370	—	—	—	—	Do.
			Total	696					
SB-06-40-06-B	7	2/27/84	7/13/84	164	Elec.	163	—	—	McCrometer
		7/13/84	8/14/84	618	Elec.	598	—	—	Do.
		8/14/84	10/30/84	301	Elec.	292	—	—	Do.
			Total	1083	Total	1053			
SB-06-40-09-AAC	8	2/28/84	7/02/84	—	Gas	—	—	—	Crop destroyed by hail

Table 3A.—Time-of-operation data for irrigation wells in Chase County—Continued

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-06-40-15-DCA	9	10/25/83	7/12/84	466	Elec.	466	—	—	McCrometer
		7/12/84	8/02/84	437	Elec.	446	—	—	Do.
		8/02/84	8/14/84	201	Elec.	199	—	—	Do.
		8/14/84	10/30/84	388	Elec.	387	—	—	Do.
			Total	1492	Total	1498			
SB-06-41-11-C	10	10/25/83	7/13/84	42	Elec.	45	—	—	Water Specialties
		7/13/84	8/02/84	308	Elec.	296	—	—	Do.
		8/02/84	8/13/84	105	Elec.	110	—	—	Do.
		8/13/84	10/30/84	327	Elec.	338	—	—	Do.
			Total	782	Total	789			
SB-07-36-13-CBA	11	10/24/83	7/12/84	73	Elec.	71	—	—	McCrometer
		7/12/84	8/02/84	472	Elec.	472	—	—	Do.
		8/02/84	8/14/84	286	Elec.	288	—	—	Do.
		8/14/84	10/29/84	549	Elec.	554	—	—	Do.
			Total	1380	Total	1385			
SB-07-36-18-DAC	12	10/24/83	10/29/84	—	—	—	—	—	No data
SB-07-36-32-CDD	13	10/24/83	7/12/84	38	—	—	Engine hr.	34	McCrometer
		7/12/84	8/14/84	132	—	—	Engine hr.	128	Do.
		8/14/84	10/29/84	152	—	—	Engine hr.	147	Do.
			Total	322			Total	309	
SB-07-38-23-BCC	14	10/24/83	2/29/84	0	Elec.	0	—	—	McCrometer
		2/29/84	7/09/84	291	Elec.	288	—	—	Do.
		7/09/84	10/29/84	639	Elec.	640	—	—	Do.
			Total	930	Total	928			
SB-07-39-09-D	15	—	—	—	—	—	—	—	No data for wheat
SB-07-39-28-B	16	10/25/83	7/12/84	—	Elec.	323	—	—	Inline flowmeter not working
		7/12/84	8/14/84	—	Elec.	521	—	—	Do.
		8/14/84	10/30/84	—	Elec.	482	—	—	Do.
					Total	1326			

Table 3A.—Time-of-operation data for irrigation wells in Chase County—Continued

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-07-40-07-CCB	17	10/26/83	7/13/84	198	Elec.	187	—	—	Water Specialties
		7/13/84	8/13/84	622	Elec.	587	—	—	Do.
		8/13/84	8/16/84	74	Elec.	70	—	—	Do.
		8/16/84	10/30/84	465	Elec.	473	—	—	Do.
			Total	1359	Total	1317			
SB-07-40-27-AAC	18	2/28/84	7/12/84	248	Elec.	250	—	—	McCrometer
		7/12/84	8/14/84	506	Elec.	537	—	—	Do.
		8/14/84	10/30/84	341	Elec.	343	—	—	Do.
			Total	1095	Total	1130			
SB-07-40-34-ADC	19	10/25/83	7/12/84	117	Elec.	125	—	—	McCrometer
		7/12/84	8/14/84	392	Elec.	386	—	—	Do.
		8/14/84	10/30/84	532	Elec.	534	—	—	Do.
			Total	1041	Total	1045			
SB-07-41-18-AA	20	10/25/83	7/09/84	209	Elec.	207	—	—	McCrometer
		7/09/84	8/13/84	514	Elec.	515	—	—	Do.
		8/13/84	10/30/84	421	Elec.	416	—	—	Do.
			Total	1144	Total	1138			
SB-07-41-25-B	21	10/25/84	7/13/84	206	Elec.	181	—	—	McCrometer
		7/13/84	8/13/84	264	Elec.	224	—	—	Do.
		8/13/84	10/30/84	163	Elec.	163	—	—	Do.
			Total	633	Total	568			
SB-07-42-25-BAB	22	10/25/83	7/09/84	101	Elec.	96	—	—	McCrometer
		7/09/84	8/13/84	790	Elec.	791	—	—	Do.
		8/13/84	10/30/84	596	Elec.	614	—	—	Do.
			Total	1487	Total	1501			

Table 3A.—Time-of-operation data for irrigation wells in Chase County—Continued

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-08-36-07-BBD	23	—	—	—	—	—	—	—	No data for wheat
SB-08-37-22-A	24	10/24/83	7/12/84	146	Gas	71	—	—	McCrometer
		7/12/84	8/15/84	394	Gas	410	—	—	Do.
		8/15/84	10/29/84	389	Gas	386	—	—	Do.
			Total	925	Total	867			
SB-08-38-12-C	25	10/24/83	7/12/84	237	—	—	Engine hr.	285	McCrometer
		7/12/83	8/02/84	343	—	—	Engine hr.	196	Do.
		8/02/84	8/14/84	148	—	—	Engine hr.	0	Engine hour meter not working
		8/14/84	10/29/84	314	—	—	Engine hr.	0	Do.
			Total	1042					
SB-08-38-21-DD	26	10/24/83	8/03/84	479 N	—	—	—	—	McCrometer N=North
				507 S	—	—	—	—	Do. S=South
		8/03/84	8/14/84	203 N	—	—	—	—	Do. N=North
				204 S	—	—	—	—	Do. S=South
		8/14/84	10/29/84	346 N	—	—	—	—	Do. N=North
				368 S	—	—	—	—	Do. S=South
			Total	1028 North 1079 South					
SB-08-41-31-BAB	27	10/25/83	7/13/84	209	—	—	Engine hr.*	—	McCrometer; *Engine hr. meter not working.
		7/13/84	9/12/84	607	—	—	Engine hr.	730	McCrometer
		9/12/84	10/30/84	11			Engine hr.	11	Do.
			Total	827					

Table 38.—Time-of-operation data for irrigation wells in Dundy County

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-02-38-07-B	28	10/25/83	7/11/84	233	Elec.	225	—	—	Sparling
		7/11/84	8/01/84	379	Elec.	382	—	—	Do.
		8/01/84	10/30/84	622	Elec.	632	—	—	Do.
			Total	1234	Total	1239			
SB-02-38-20-BA	29	10/25/83	7/11/84	322	Elec.	329	—	—	Sparling
		7/11/84	8/01/84	382	Elec.	377	—	—	Do.
		8/01/84	10/31/84	574	Elec.	566	—	—	Do.
			Total	1278	Total	1272			
SB-02-39-13-D	30	10/25/83	8/01/84	654	—	—	—	—	McCrometer
		8/01/84	8/16/84	270	—	—	—	—	Do.
		8/16/84	10/30/84	219	—	—	—	—	Do.
			Total	1143					
SB-02-39-28-BB	31	10/25/83	8/01/84	293	Elec.	299	—	—	McCrometer
		8/01/84	9/10/84	563	Elec.	530	—	—	Do.
		9/10/84	10/31/84	72	Elec.	70	—	—	Do.
			Total	928	Total	899			
SB-02-40-02-ACDD	32	10/27/83	6/12/84	93	—	—	—	—	Water Specialties
		6/12/84	7/11/84	699	—	—	—	—	Do.
		7/11/84	10/31/84	1318	—	—	—	—	Do.
			Total	2110					
SB-02-40-02-BBAA	33	2/28/84	6/12/84	64	—	—	Pivot hr.	—	McCrometer
		6/12/84	8/01/84	682	—	—	Pivot hr.	649	Do.
		8/01/84	10/31/84	670	—	—	Pivot hr.	649	Do.
			Total	1416					

Table 3B.—Time-of-operation data for irrigation wells in Dundy County—Continued

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-03-38-06-D	34	10/25/83	8/16/84	883	—	—	Engine hr.	850	Sparling
		8/16/84	10/30/84	228	—	—	Engine hr.	227	Do.
			Total	1111			Total	1077	
SB-03-38-17-BABC	35	10/25/83	7/11/84	265	N. Gas	258	—	—	McCrometer
		7/11/84	8/01/84	68	N. Gas	53	—	—	Do.
		8/01/84	10/30/84	285	N. Gas	345	—	—	Do.
			Total	618	Total	656			
SB-03-39-26-AA	36	10/25/83	7/11/84	—	Elec.	140	—	—	New meter (SLV)
		7/11/84	8/01/84	319	Elec.	170	—	—	New meter (McCrometer)
		8/01/84	10/30/84	178	Elec.	281	—	—	McCrometer
					Total	593			
SB-03-40-06-B	37	10/27/83	6/12/84	158	—	—	—	—	Water Specialties
		6/12/84	7/11/84	112	—	—	—	—	Do.
		7/11/84	8/01/84	591	—	—	—	—	Do.
		8/01/84	10/31/84	1142	—	—	—	—	Do.
			Total	2003					
SB-03-40-36-CAC	38	10/27/83	7/11/84	268	—	—	—	—	McCrometer
		7/11/84	8/01/84	358	—	—	—	—	Do.
		8/01/84	10/31/84	609	—	—	—	—	Do.
			Total	1235					
SB-03-41-02-B	39	3/01/84	7/11/84	465	—	—	Pivot hr.	219	Water Specialties
		7/11/84	8/01/84	494			Pivot hr.	488	Do.
		8/01/84	10/31/84	827	—	—	Pivot hr.	810	Do.
			Total	1786			Total	1517	

Table 3B.--Time-of-operation data for irrigation wells in Dundy County--Continued

Well location	Map number from figure 2	Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-03-41-03-A	40	6/12/84	7/11/84	227	Elec.	208	Pivot hr.	211	Sparling
		7/11/84	8/01/84	456	Elec.	378	Pivot hr.	473	Do.
		8/01/84	10/31/84	846	Elec.	859	Pivot hr.	892	Do.
			Total	1529	Total	1445	Total	1576	
SB-03-42-10-DA	41	10/27/83	7/31/84	848	Elec.	834	—	—	McCrometer
		7/31/84	8/16/84	300	Elec.	291	—	—	Do.
		8/16/84	10/31/84	243	Elec.	252	—	—	Do.
			Total	1391	Total	1377			
SB-04-38-04-AA	42	10/25/83	7/11/84	232	N. Gas	289	—	—	McCrometer
		7/11/84	8/01/84	479	N. Gas	477	—	—	Do.
		8/01/84	8/16/84	341	N. Gas	339	—	—	Do.
		8/16/84	10/30/84	468	N. Gas	457	—	—	Do.
			Total	1520	Total	1562			
SB-04-40-08-D	43	5/13/83	10/27/83	151	Elec.	159	—	—	McCrometer (on wheat)
		10/27/83	6/12/84	196	Elec.	168	—	—	Do.
		6/12/84	7/31/84	413	Elec.	—	—	—	New electric meter
		7/31/84	8/16/84	166	Elec.	163	—	—	McCrometer
		8/16/84	10/31/84	114	Elec.	116	—	—	Do.
			Total	1040					
SB-04-41-23-CAC	44	—	—	—	—	—	—	—	No data for wheat

Table 3C.—Time-of-operation data for irrigation wells in Perkins County

Well location		Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-09-37-09-DDB	45	10/24/83	6/13/84	22	Elec.	21	—	—	McCrometer
		6/13/84	7/10/84	221	Elec.	215	—	—	Do.
		7/10/84	8/15/84	583	Elec.	607	—	—	Do.
		8/15/84	10/29/84	423	Elec.	438	—	—	Do.
			Total	1249	Total	1281			
SB-09-39-06-ABC	46	10/24/83	7/10/84	315	Elec.	306	—	—	McCrometer
		7/10/84	8/15/84	647	Elec.	656	—	—	Do.
		8/15/84	10/29/84	419	Elec.	425	—	—	Do.
			Total	1381	Total	1387			
SB-10-36-08-ACC	47	10/24/83	7/10/84	240	Elec.	243	—	—	Sparling
		7/10/84	8/15/84	563	Elec.	560	—	—	Do.
		8/15/84	10/29/84	416	Elec.	404	—	—	Do.
			Total	1219	Total	1207			
SB-10-39-27-C	48	2/29/84	6/13/84	32	Elec.	31	—	—	McCrometer
		6/13/84	8/03/84	691	Elec.	659	—	—	Do.
		8/03/84	8/15/84	212	Elec.	208	—	—	Do.
		8/15/84	8/17/84	48	Elec.	28	—	—	Do.
		8/17/84	10/29/84	292	Elec.	289	—	—	Do.
			Total	1275	Total	1215			
SB-11-35-33-BDB	49	10/24/83	7/10/84	186	Elec.	189	—	—	Water Specialties
		7/10/84	8/03/84	147	Elec.	147	—	—	Do.
		8/03/84	8/15/84	70	Elec.	70	—	—	Do.
		8/15/84	10/29/84	173	Elec.	173	—	—	Do.
			Total	576	Total	579			
SB-11-36-01-CAC	50	2/29/84	7/10/84	272	Elec.	271	—	—	Water Specialties
		7/10/84	8/15/84	405	Elec.	416	—	—	Do.
		8/15/84	8/17/84	28	Elec.	28	—	—	Do.
		8/17/84	10/29/84	323	Elec.	331	—	—	Do.
			Total	1028	Total	1046			

Table 3C.—Time-of-operation data for irrigation wells in Perkins County—Continued

Well location		Date		Inline flowmeter time (hours)	Energy meter		Other		Remarks
		Begin	End		Type	Time (hours)	Source	Time (hours)	
SB-11-38-15-A	51	10/24/83	7/10/84	314	—	—	Engine hr.	301	McCrometer
		7/10/84	8/17/84	506	—	—	Engine hr.	495	Do.
		8/17/84	10/29/84	266	—	—	Engine hr.	265	Do.
			Total	1086			Total	1061	
SB-11-39-09-DD	52	10/24/83	7/10/84	280	Elec.	273	—	—	McCrometer
		7/10/84	8/15/84	637	Elec.	667	—	—	Do.
		8/15/84	10/29/84	324	Elec.	354	—	—	Do.
			Total	1241	Total	1294			
SB-11-40-22-BBB	53	—	—	—	—	—	—	—	No data for wheat
SB-11-40-23-DDA	54	10/24/83	8/03/84	687	Elec.	664	—	—	Water Specialties
		8/03/84	8/15/84	219	Elec.	220	—	—	Do.
		8/15/84	10/29/84	270	Elec.	270	—	—	Do.
			Total	1176	Total	1154			
SB-12-36-30-B	55	10/24/84	7/10/84	204	Elec.	204	—	—	Water Specialties
		7/10/84	8/03/84	414	Elec.	410	—	—	Do.
		8/03/84	10/29/84	440	Elec.	437	—	—	Do.
			Total	1058	Total	1051			
SB-12-38-20-BBD	56	2/27/84	8/15/84	609	—	—	—	—	Sparling
		8/15/84	10/29/84	248	—	—	—	—	Do.
			Total	857					
SB-12-40-25-CCC	57	2/27/84	8/03/84	952	—	—	—	—	McCrometer
		8/03/84	8/15/84	135	—	—	—	—	Do.
		8/15/84	10/29/84	344	—	—	—	—	Do.
			Total	1431					

Explanation of Terms for Tables 4A-4C

TABLE 4A-4C--WATER APPLIED

Well Location
Local numbering system used for tables 4A-4C; see figure 3

Map number
Number corresponding to location of wells monitored during the 1984 growing season; see figure 2

Pumpage

Inline —Acre-feet of water pumped; measured by the inline flowmeter

Sampling —Acre-feet of water pumped; calculated by multiplying average Clampitron discharge by total hours of operation computed using the energy meter or other source (inline flowmeter used for time of operation if no other source available)

Irrigated acres—Acreage of irrigated crop

Water applied

Inline —Inches of water applied to crop; calculated by multiplying pumpage (acre-feet) from inline flowmeter by 12 (to convert feet to inches) and dividing by acreage of crop

Sampling —Inches of water applied to crop; calculated by multiplying pumpage (acre-feet) from sampling by 12 (to convert feet to inches) and dividing by acreage of crop

Table 4A.—Summary of water applied to crops in Chase County

Well location	Map number from figure 2	Crop type	System type	Pumpage (acre-feet)		Irrigated acres	Water applied (inches)		Remarks
				Inline	Sampling		Inline	Sampling	
SB-05-38-08-DB	1	Beans	Pivot	150.8	126.1	125.2	14.4	12.1	Some water on wheat
SB-05-39-03-CC	2	Barley	Pivot	—	—	129.3	—	—	Crop destroyed, no pumpage data
SB-05-39-04-BA	3	Corn	Pivot	181.0	174.9	133.5	16.3	15.7	—
SB-05-39-21-B	4	Corn Beans	Pivot	162.1	154.4	127.0	15.3	14.6	—
SB-05-39-22-B	5	Wheat	Pivot	—	—	130.0	—	—	No data for wheat
SB-06-37-19-DA	6	Corn	Pivot	120.2	108.0	125.4	11.5	10.3	—
SB-06-40-06-B	7	Corn	Pivot	120.6	121.8	120.7	12.0	12.1	—
SB-06-40-09-AAC	8	Corn	Pivot	—	—	103.8	—	—	Crop destroyed, no pumpage data
SB-06-40-15-DCA	9	Cane	Pivot	376.0	357.6	180.7	25.0	23.7	—
SB-06-41-11-C	10	Corn	Flood	193.9	201.5	99.6	23.4	24.3	—
SB-07-36-13-CBA	11	Corn	Flood	297.5	289.6	102.7	34.7	33.8	—
SB-07-36-18-DAC	12	Alfalfa Cane	Sprinkler Flood	55.1	—	80.5	8.2	—	No pumpage data
SB-07-36-32-CDD	13	Corn	Flood	54.5	52.1	46.6	14.0	13.4	—
SB-07-38-23-BCC	14	Corn	Pivot	151.3	—	113.9	15.9	—	No sampling data
SB-07-39-09-D	15	Wheat	Pivot	—	—	105.8	—	—	No data for wheat

Table 4A.—Summary of water applied to crops in Chase County—Continued

Well location	Map number from figure 2	Crop type	System type	Pumpage (acre-feet)		Irrigated acres	Water applied (inches)		Remarks
				Inline	Sampling		Inline	Sampling	
SB-07-39-20-B	16	Corn Grass	Pivot Pivot	—	170.7	128.0	—	16.0	Inline meter not working
SB-07-40-07-CCB	17	Corn	Flood	336.5	298.9	130.0	29.9	26.6	Average discharge from pygmy meter
SB-07-40-27-AAC	18	Corn	Pivot	163.6	179.1	130.2	15.1	16.5	—
SB-07-40-34-ADC	19	Cane	Pivot	471.1	493.0	443.0	12.8	13.4	—
SB-07-41-18-AA	20	Corn	Pivot	185.1	167.4	126.6	17.5	15.9	—
SB-07-41-25-B	21	Beans Wheat	Pivot Pivot	96.6	85.1	129.8	8.9	7.9	—
SB-07-42-25-BAB	22	Corn Beans	Flood Flood	418.1	444.9	190.1	26.4	28.1	—
SB-08-36-07-BBD	23	Wheat	Pivot	—	—	130.4	—	—	No data for wheat
SB-08-37-22-A	24	Corn	Pivot	162.6	150.1	130.7	14.9	13.8	—
SB-08-38-12-C	25	Corn	Pivot	175.6	175.4	152.3	13.8	13.8	Time of operation from inline flowmeter
SB-08-38-21-DD	26	Corn Oats Corn	Pivot Pivot Pivot	92.3 153.3	87.6 157.4	73.3 128.1	15.1 14.4	14.3 North pivot 14.7	North pivot South pivot
SB-08-41-31-BAB	27	Corn	Pivot	63.2	70.4	37.2	20.4	22.7	Time of operation from inline flowmeter

Table 4B.—Summary of water applied to crops in Dundy County

Well location	Map number from figure 2	Crop type	System type	Pumpage (acre-feet)		Irrigated acres	Water applied (inches)		Remarks
				Inline	Sampling		Inline	Sampling	
SB-02-38-07-B	28	Corn	Pivot	163.2	176.6	118.2	16.6	17.9	—
SB-02-38-20-BA	29	Corn	Pivot	185.5	161.7	130.8	17.0	14.8	—
SB-02-39-13-D	30	Corn	Pivot	160.4	165.4	126.0	15.3	15.7	Time of operation from inline flowmeter
SB-02-39-28-BB	31	Corn	Pivot	108.7	113.3	131.0	10.0	10.4	—
SB-02-40-02-ACDD	32	Corn	Pivot	372.3	—	243.1	18.4	—	—
SB-02-40-02-BBAA	33	Corn	Pivot	237.9	211.4	119.5	23.9	21.2	—
SB-03-38-06-D	34	Corn	Pivot	189.0	166.8	132.5	17.1	15.1	—
SB-03-38-17-BABC	35	Alfalfa	Sprinkler	95.2	96.4	67.3	17.0	17.2	—
SB-03-39-26-AA	36	Alfalfa Corn Grass	Pivot Pivot Pivot	—	86.6	130.0	—	8.0	—
SB-03-40-06-B	37	Corn	Pivot	286.4	272.4	130.0	26.4	25.1	—
SB-03-40-36-CAC	38	Corn Cane	Pivot Pivot	382.1	372.7	350.0	13.1	12.8	Time of operation from inline flowmeter
SB-03-41-02-B	39	Corn	Pivot	237.8	190.6	120.4	23.7	19.0	—
SB-03-41-03-A	40	Corn	Pivot	241.2	242.7	120.4	24.0	24.2	—
SB-03-42-10-DA	41	Corn	Pivot	290.4	238.8	176.5	19.7	16.2	—
SB-04-38-04-AA	42	Corn	Pivot	278.4	290.2	130.0	25.7	26.8	Estimated acreage; time of operation from inline flowmeter
SB-04-40-08-D	43	Wheat Corn	Pivot Pivot	162.4	152.6	127.5	15.3	14.4	1/2 wheat, 1/2 corn
SB-04-41-23-CAC	44	Wheat Cane	Pivot Pivot	—	—	121.6	—	—	No data for wheat

Table 4C.—Summary of water applied to crops in Perkins County

Well location	Map number from figure 2	Crop type	System type	Pumpage (acre-feet)		Irrigated acres	Water applied (inches)		Remarks
				Inline	Sampling		Inline	Sampling	
SB-09-37-09-DDB	45	Corn	Pivot	169.2	188.3	133.8	15.2	16.9	—
SB-09-39-06-ABC	46	Corn	Pivot	186.8	170.0	117.6	19.1	17.3	—
SB-10-36-08-ACC	47	Corn Beans	Pivot Pivot	155.8	158.9	126.0	14.8	15.1	—
SB-10-39-27-C	48	Corn	Pivot	182.6	172.9	127.0	17.2	16.3	—
SB-11-35-33-BDB	49	Corn Wheat	Pivot Pivot	92.7	92.9	130.0	8.6	8.6	—
SB-11-36-01-CAC	50	Corn	Pivot	143.0	134.5	125.5	13.7	12.9	—
SB-11-38-15-A	51	Corn	Pivot	148.5	144.2	128.0	13.9	13.5	—
SB-11-39-09-DD	52	Corn	Pivot	150.9	160.7	129.2	14.0	14.9	—
SB-11-40-22-BBB	53	Wheat	Pivot	—	—	125.0	—	—	No data for wheat
SB-11-40-23-DDA	54	Corn	Pivot	197.2	193.0	125.0	18.9	18.5	—
SB-12-36-30-B	55	Corn	Pivot	137.1	136.4	100.0	16.4	16.4	Time of operation from inline flowmeter
SB-12-38-20-BBD	56	Beans	Pivot	110.3	80.2	126.0	10.5	7.6	—
SB-12-40-25-CCC	57	Corn	Pivots	332.8	227.3	260.0	15.4	15.6	Estimated acreage; Time of operation from inline flowmeter One well for two pivots.

SELECTED REFERENCES

Heimes, F. J., and Luckey, R. R., 1980, Evaluating methods for determining water use in the High Plains in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming; 1979: U.S. Geological Survey Water-Resources Investigations 80-111, 118 p.

Lappala, E. G., 1978, Quantitative hydrogeology of the Upper Republican Natural Resources District, southwest Nebraska: U.S. Geological Survey Water-Resources Investigations, 78-38, 199 p.

Leonard, G. J., and Buntoon, P. W., 1974, Groundwater geology of Southwest Nebraska Ground Water Conservation District: Nebraska Water Survey Paper 37, 37 p.

Luckey R. R., Heimes, F. J., and Gaggiani, N. G., 1980, Calibration and testing of selected portable flowmeters for use on large irrigation systems: U.S. Geological Survey Water-Resources Investigations 80-72, 21 p.

National Climatic Data Center, 1983, Climatological data, Nebraska: Asheville, N.C., National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, v. 88, nos. 4-10.

Stephens, D. M., Heimes, F. J., and Luckey, R. R., 1984, Irrigation data from Chase, Dundy, and Perkins Counties, Southwestern Nebraska, 1983: U.S. Geological Survey Open-File Report 84-471, 31 p.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1986—679-999/20027 REGION NO. 8